

STEM 2 - Workgroup II. 1.			Short Term Goals
	Track 1 - Common K-12 Science/Tech/Math Curricula		
	Apply teaching and learning best practices in STEM education with a common rigorous curriculum taught by prepared educators in science/technology/math.		
Rec 3	Implement international best practices in professional development programs for P-16 STEM teachers to increase the intensity, duration and rigor of professional development.		
	Survey elem, ms, and hs teachers to determine where PD needs are; PD may be centered around curriculum, knowledge, content, and/or pedagogy. Establish a committee to review PD annually and make recommendations based on the needs of teachers across the state.	<ul style="list-style-type: none"> Convene a professional development oversight committee to review current professional development in mathematics and science and make specific recommendations centered on the needs of teachers across Kentucky. 	
	Though there is much PD going on across the state, it is not necessarily equitable or available to those that need it most. CPE and KDE should look at the design of their RFA/RFPs for STEM PD and attempt to frame them so that they are complementary and reflect the annual statewide needs assessment along with geographical and demographical diversity needs. Consider instituting some common "PD institutes" annually across the state to address some of the more global or consistent needs that are aligned to the STEM vision and are supported by research as effective practices (e.g., assessment for learning -- clarifying and sharing learning intentions; more effective questioning; teaching metacognitive/self-reflection strategies; intentionally uncovering/addressing misconceptions, etc.) Perhaps forming regional cadres of 'P-16 STEM Educators ' who can work with multiple schools/districts on a regular basis to improve the quality of teaching and learning (somewhat like the former Regional Service Center system--only requiring higher education partners to ensure P-16 coherence and continuity).	<ul style="list-style-type: none"> Structure a high quality mathematics and science professional development program that addresses teachers' content and pedagogy needs. 	
	Continue work on end of course exams in Math/Science and ensure alignment of math and science to ACT; also provide project based assessments in STEM disciplines to accommodate different learning and teaching styles; multiple types of assessments are required to stay true to the way Kentucky assesses students.	<ul style="list-style-type: none"> Upgrade assessment strategies for student learning in the STEM disciplines, such as standardized end-of-course exam and full use of the ACT educational Planning and Assessment System (PEAS). Ensure alignmnet of any assessment with the developing standards'-based curricula. 	

	Provide funding to implement and sustain programs such as PLTW, Biomedical Sciences, adv manufacturing and energy; develop business partnerships to advise and fund program needs and professional development needs; develop partnerships with postsecondary/secondary to track students through pipeline programs and curriculum	<ul style="list-style-type: none">• Create curricular, research, and innovation opportunities in environmental and sustainable energy (a unique Kentucky initiative), biosciences, advanced manufacturing, and other Economic Development priorities/other emerging technologies for STEM students throughout the pipeline (P-20).	
	We must insist that new opportunities for learning utilize mulitple modes of delivery options. Develop academic tie in to elective courses and utilize virtual learning to bring academic or real world instruction to courses.	APPLY USE OF TECHNOLOGY in teaching with hybrid programs and blended COURSE DELIVERY (Carnegie Math/Student Technology Leadership Programs) WITH VIRTUAL HIGH SCHOOL AND VIRTUAL CAMPUS A MAJOR PLAYER.	
	Educators (at least traditional K-12) typically have very little knowledge of careers--they have spent their entire lives in 'school' situations only--so this will require much intentional and focused effort to change. They (teachers/counselors) simply cannot convey what they do not know/understand. Strong public awareness campaigns must be launched using a variety of media in order to inform the state at large; direct training of educators and counselors involving partnering with business and industry outside of education must also happen--in every region of the state and on a regular basis.	Include counseling/advising PD with adequate numbers of counselor:student ratio for career interests/counseling at secondary and postsecondary levels with engagement of parents and P-16 Councils.	
	Debbie Anderson, Chair - workgroup notes from Conf Call Sept. 17, 2008		
	<u>Workgroup Participants:</u> Debbie Anderson, Chair; Debbie Hendricks for Elaine Ferris, Karen Kidwell, Bill Bush, Carol Hanley, Claudia Marin		

Longer-Term Goals
